

What ~~weighs~~<sup>mass</sup> more

A Kg of gold

OR

A Kg of feathers?

$m = 1 \text{ kg}$  of gold  
 $g_{\text{earth}} = 9.8 \text{ m/s}^2$   
 $W = ?$

} Data

$W = mg$  — EQUATION

$W = (1 \text{ kg})(9.8 \text{ m/s}^2)$  SUBSTITUTION

$W = 9.8 \text{ N} \downarrow$  DOWN

FORCE - PUSH OR PULL ON  
AN OBJECT

CONTACT FORCE

DIRECT CONTACT ON AN  
OBJECT

NON-CONTACT FORCE

FORCE THAT DOES NOT HAVE  
direct contact gravitational  
magnetic

FORCE IS A VECTOR  
MEASURED IN NEWTONS (N)

$$\text{kg} \cdot \frac{\text{m}}{\text{s}^2} = \text{Newton}$$

$$m = 55 \text{ kg}$$

$g_{\text{MARS}}$

$g_{\text{earth}}$

Weight on Earth

Weight on MARS

$$\begin{aligned} W &= mg \\ &= (55 \text{ kg})(9.8 \text{ m/s}^2) \\ &= 539 \text{ N} \downarrow \end{aligned}$$

$$\begin{aligned} W &= mg \\ &= (55 \text{ kg})(3.8 \text{ m/s}^2) \\ &= 209 \text{ N} \downarrow \end{aligned}$$